

AMENDMENTS TO THE CLAIMS

1. (Currently Amended): An electrochemical gas probe for measuring an amount of gas in a molten metal comprising:

a sensing unit having a reference electrode, a sensing electrode, a solid-state reference mixture adjacent to the reference electrode, and a conductor between the reference electrode and the sensing electrode; and

a supporting unit having a main support, a protection cover and a stabilizing material, wherein the stabilizing material is between the sensing unit and the protection cover of the supporting unit, and wherein the solid-state reference mixture includes a metal, a hydride of the metal, and an oxide of the metal.

2. (Original): The electrochemical gas probe according to claim 1, wherein the main support includes ceramic.

3. (Original): The electrochemical gas probe according to claim 2, wherein the main support and the protection covers are formed of the same material and as one body.

4. (Original): The electrochemical gas probe according to claim 1, wherein the main support includes graphite and is electrically grounded.

5. (Original): The electrochemical gas probe according to claim 1, wherein the sensing unit further includes an electrical lead wire for electrical connection to a controller, the electrical lead wire having a diameter less than 200 μm .

6. (Cancelled)

7. (Currently Amended): The electrochemical gas probe according to claim 1 [[6]], wherein the metal includes one of ~~a material selected from the group consisting of~~ Ti, Zr, and Ca.

8. (Original): The electrochemical gas probe according to claim 1, wherein the conductor is a proton conductor and includes calcium zirconate doped with indium.

9. (Currently Amended): The electrochemical gas probe according to claim 1, wherein the stabilizing material includes ~~the sensing electrode is in contact with~~ a mixture of a [[second]] metal and an oxide of the [[second]] metal.

10. (Currently Amended): The electrochemical gas probe according to claim 9, wherein the [[second]] metal includes one of ~~a material selected from the group consisting of~~ Ti, Zr, Ca, Mn, Fe, and Ni.

11. (Original): The electrochemical gas probe according to claim 1, wherein the sensing electrode is in contact with a carbon powder.

12. (Original): The electrochemical gas probe according to claim 1, wherein the sensing unit further includes a gas-tight ceramic lid for protecting the solid-state reference mixture.

13. (Original): The electrochemical gas probe according to claim 1, wherein the molten metal is either aluminum or zinc.

14. (Original): The electrochemical gas probe according to claim 1, wherein the sensing unit and supporting unit are physically and electrically separable.